DOCUMENT RESUME

ED 063 345 TM 001 365

TITLE	Intensification of the Learning Process: Diagnostic Instruments--Learner State Check List Evaluation Response Form. A Series of Reports Designed for Classroom Use.
INSTITUTION	Bucks County Public Schools, Doylestown, Pa.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
REPORT NO	R-4
PUB DATE	Feb 70
NOTE	71p.; An ESEA Title 3 Project
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Behavioral Objectives; *Check Lists; *Diagnostic Tests; *Evaluation Methods; Language Arts; *Learning Processes; Mathematics Curriculum; Science Curriculum; Social Studies
IDENTIFIERS	ESEA Title 3; PEP; *Personalizing Educational Prescriptions

ABSTRACT

Check lists for determining the pupils' position along a curriculum scale are presented. A behavioral objectives evaluation response form is included. (See TM 001 363 for summary report of the project; for other related documents, see TM 001 160, 364, 366-374.) (MS)

ED 063345

TM 001 365

INTENSIFICATION of the LEARNING PROCESS

A SERIES OF REPORTS
DESIGNED FOR CLASSROOM USE

REPORT NO. 4

DIAGNOSTIC INSTRUMENTS

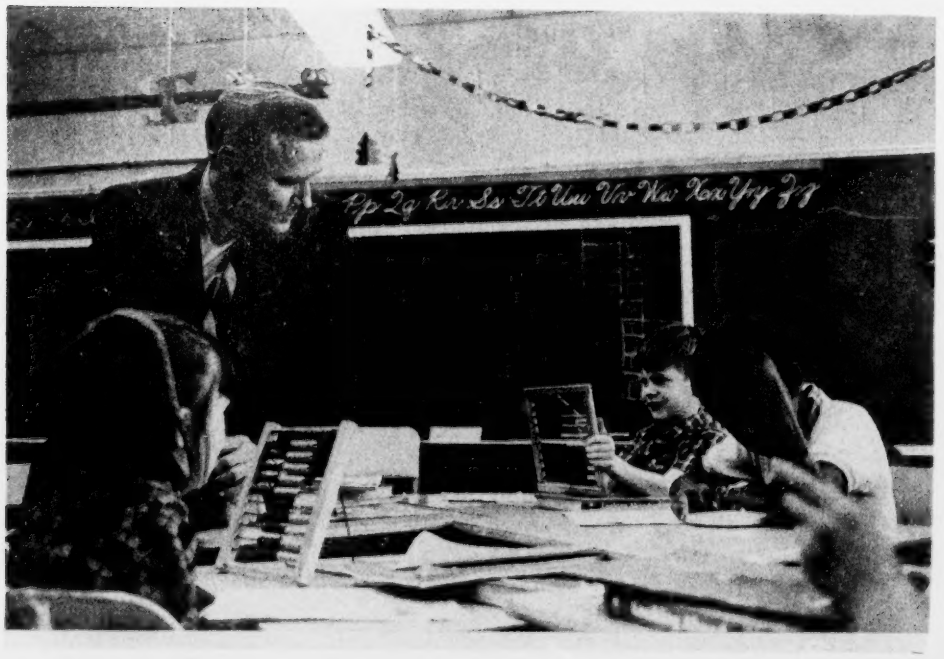
Learner State Check List
Evaluation Response Form

AN ESEA TITLE III PROJECT

BUCKS COUNTY PUBLIC SCHOOLS
DIVISION OF CURRICULUM AND INSTRUCTION SERVICES

FEBRUARY, 1970

PERSONALIZING EDUCATIONAL PRESCRIPTIONS



AN ESEA TITLE III PROJECT
PRODUCED BY
BUCKS COUNTY PUBLIC SCHOOLS
COUNTY ADMINISTRATION BUILDING
DOYLESTOWN, PENNSYLVANIA 18901

PREFACE

Traditionally the Bucks County Schools have been in the forefront of promising educational practices. Therefore, it came as no surprise that the PEP Program was funded by the Federal Government; it was equally reassuring that the NATION'S SCHOOLS identified Bucks County's "Intensification of the Learning Process" as one of the twelve most innovative proposals in the Country.

While this Program may have used a new approach, educators the World over have been giving lip-service for years to the need for personalizing education. In a day and age when we are surrounded by mechanized inventions of all sorts, it becomes even more important for us to preserve the human element related to the teaching-learning process.

The primary goal of the PEP Program is the development of educational prescriptions--prescriptions which are the result of bringing diagnostic services and multi-media services into harmonious relationship as they focus on the individual needs of youth. The success of the venture is tied to our most important educational product--the child himself. With this focus we believe administrative and other supportive services can aid the teacher so that she can directly fit the educational diet to the needs of individual students.

Dr. George E. Raab
Superintendent
Bucks County Public Schools

REQUESTING THE REPORTS

The following reports reflect the views, principles, processes and products used in the dissemination of information about the Bucks County Project for the Intensification of the Learning Process. These reports may be used as a framework for schools developing personalized educational prescriptions for its primary elementary children.

There are ten individual reports. Rather than combine all into one, it was decided to disseminate individual reports. In this way, persons interested in any one individual report may request and receive it without going through a larger document.

Each report is described below by report number, title, and content summary:

Report No. 1 — Project Description

Describes the project goals, objectives, and team involved. Explains briefly the PEP approach to learning diagnosis and use of multi-level stimuli. Also includes a final summary report as well as changes in retrospect.

Report No. 2 — Research Findings

- Part A — Design to Measure the Effectiveness of Personalized Educational Prescriptions in a Pilot Second Grade Classroom
- Part B — Design to Measure the Effectiveness of Personalized Educational Prescriptions in the Second Year of a Pilot Study
- Part C — Analysis of Pre-Test and Post-Test Data

Report No. 2 cont'd.

Part I An Analysis of Data

Part II Homogeneity/Heterogeneity of Group Variances on Pre and Post Tests

Report No. 3

Gross Motor Performance Scale

- Introduction
- Test Administration
- Reliability of Test Items
- Interpretation of Test Scores
- Suggested Circuits for Improving Performance in Tested Areas
- Physical Education Curriculum Guide

Report No. 4

Diagnostic Instruments

- Learner State Check List
- Behavioral Objectives Evaluation Response Form

Report No. 5

Pupil Description Worksheet

- Introduction
- User's Manual
- The Worksheet
- Response Sheet
- Class Pupil Profile Grade 2
- Class Pupil Profile Grade 3
- Initial Personalized Educational Prescription
- Data Collection and Processing

Report No. 6

Educational Grouping Questionnaire

- A Classification of Children of Elementary School Age
- EGQ Manual
- EGQ Instrument
- Reports Provided by Computer Programs for the EGQ System
- Psychological Categories
- Sample Print-Out
- Recommendations for Future Development

Report No. 7	Diagnostic Instruments
	Visual Performance Screening Test
	Observing the Learner
	Questionnaire - Parent
Report No. 8	Automated Instructional Resources Retrieval System
	How to Use the AIRRS Thesaurus
	The Thesaurus
Report No. 8a	AIRRS Supplement
	Preface
	Why a Thesaurus
	Format of Document Record
	Present Status
Report No. 9	Curriculum Resources Center
Report No. 10	Prototype Curriculum Guides
	Mathematics
	Language Arts
	Science
	Social Studies

Each of the above reports are products related to the two objectives of the Intensification of the Learning Process, better known as Personalizing Educational Prescriptions (PEP) project.

1. The improvement of the diagnostic process with primary emphasis on the development of personalized educational prescriptions for all pupils.
2. The improvement and expansion of multi-media services for all pupils.

Bucks County Public Schools

Project for the

I N T E N S I F I C A T I O N O F T H E L E A R N I N G P R O C E S S

Report No. 4

DIAGNOSTIC INSTRUMENTS

LEARNER STATE
- Language Arts
- Social Studies
- Mathematics
- Science
- Combined Worksheet

BEHAVIORAL OBJECTIVES
- Response Evaluation

ACKNOWLEDGEMENT

The work presented or reported herein was performed pursuant to a Grant from the U. S. Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U. S. Office of Education, and no official endorsement by the U. S. Office of Education should be inferred.

CONTENTS

	Page
LEARNER STATE	
Language Arts Curriculum	3
Worksheet	6
Social Studies Curriculum	14
Worksheet	17
Mathematics Worksheet	22
Science Curriculum	32
Worksheet	38
Combined Worksheet	44
Geometric Concepts	57
Understanding Time and Chronology	59
BEHAVIORAL OBJECTIVES	
Response Evaluation	60

LEARNER STATE

Learner state refers to the pupils' position along a curriculum scale. The learner state characteristics stem largely from the exhaustive work of B. S. Bloom in the development of the Taxonomy of Educational Objectives: Cognitive Domain.

Learner state has much to do with the way a teacher groups her students for instruction. The following is a partial and preliminary category system from which a systematic information processing system may evolve. Numerous questions as listed below evolve when working with these statements:

1. Do we group behavioral objectives by grade or across grade level, by subject matter? If by grade level, very slow or very advanced pupils may not be described properly. If not by grade level, teachers have to read everything and there's a tremendous amount to have to check.

2. Do we group them by curriculum area? If so, there either will be needless duplication in overlapping areas or else missing statements in some areas that occur, instead, elsewhere. If not, again all material must be checked by everyone. If the elementary school teacher is checking the statements, this is OK since she's the one who teaches all the areas; if this is to be extended to secondary schools later, it will be better to have the material separated.

3. Do we want quite so much material, so many statements? As of now, we have
   200 statements for Mathematics,
   202 " " Science,
   95 " " Social Studies,
   235 " " Language Arts,
   732 total (not considering duplications).

4. In considering the question of arrangement by grade level, some statements (especially in Math) are duplicated in different grade levels, implying (though not stating) a degree of ability that differs from one grade to the other. How can this idea be covered clearly? Duplicating the statements without indicating the degree of ability required is confusing. Trying to express the degree of ability is difficult. Not duplicating the statement leaves the questions to be answered at whatever level the teacher happens to think they apply and makes growth impossible to demonstrate.

5. How are these statements to be checked? As a yes-no choice? As a 3-5 point scale? In terms of what criterion? With reference to age or grade (see (4) above) or what? Should they be referred to curriculum area if they cover duplicated material (see (2) above)?

6. In some cases the main subheadings seem to be a valuable part of the statement (though it need not be repeated in writing each of the statements); how should these be included? Should they be?

7. In printout of Language Arts material, there is much repetition of phrases like "Associate letters with the sound they represent;" and "Use clues in structural elements to unlock strange words;", each followed by a different specific instance. Output, as printed for a teacher to use, should show each of these general sub-headings only once and follow it by the specifics that are satisfied and are not satisfied by the pupil. This would make it more readable and shorter; however, it presents problems of storage and display.

8. Also in Language Arts material, is it important to go into the detail shown under the headings "Unlock strange words by substituting consonant elements?"

Learner State

Language Arts Curriculum

1. Listens attentively to content when presented with models and pictures.
2. Demonstrates listening and observing with a purpose.
3. Demonstrates ability to speak with accuracy, fluency and poise.
4. Shows interest in looking at books, pictures and bulletin boards.
5. Interprets pictorial materials.
6. Selects stories and songs from books familiar to him.
7. Demonstrates ability to keep to a topic.
8. Defines word meanings in terms of use in relation to an object.
9. Identifies parts missing from incomplete pictures.
10. Reads labels in functional situations: i. e. "scissors", "crayons", etc.
11. Demonstrates ability to read experience charts.
12. Demonstrates readiness and desire for writing.
13. Develops oral vocabulary to speak in complete and complex sentences.
14. Demonstrates ability to print name in capital and small letters.
15. Identifies certain words with objects and pictures of objects when they apply to personal experiences.
16. Shows ability to articulate sounds.
17. Relates events in sequence.
18. Identifies double meanings of words.
19. Applies accepted grammatical usage in oral speech.
20. Compares and contrasts differences in word forms.
21. Selects and voices words that begin with the same sound.
22. Demonstrates use of working concepts and reading vocabulary.

23. Uses pictures, configuration, context and other beginning word attack clues.

24. Reads first reader material with comprehension.

25. Writes all letters of the alphabet from copy.

26. Shows ability to use punctuation and capitalization.

27. Differentiates and reproduces basic speech sounds.

28. Writes simple sentences and stories independently.

29. Writes all the letters of the alphabet from memory.

30. Develops personal standards in neatness and work habits.

31. Reads materials at an easy reading level with speed, fluency and independence.

32. Reads first reader materials independently with understanding and enjoyment.

33. Reads second reader materials with comprehension, silently and orally, with guidance of teacher.

34. Uses table of contents.

35. Uses capital letters and punctuation in group dictation and in personal writing.

36. Participates in discussion; expresses and defends his own opinion.

37. Demonstrates independence in attacking new words through structural as well as phonetic analysis.

38. Uses and interprets same word with different meanings into writing and reading.

39. Reads with comprehension both factual and inferential content at a third reader level.

40. Uses index, glossary, dictionary, encyclopedia and other information materials for independent, recreational and functional reading.

41. Develops versatility in adjusting rate of reading according to purpose.

42. Uses correct spelling and legibility in personal writing.

43. Constructs social notes; plans and writes friendly letters independently.

44. Uses dictionary systematically and recognizes diacritical marks.

45. Selects main idea of a story.

46. Organizes simple outlines with guidance.

47. Constructs simple paragraphs.

48. Demonstrates ability to report content from informational and recreational reading.

49. Develops reading taste, abilities and interests to include poetry and simple classics and contemporary children's literature.

50. Checks independently correct use of the language skills - listening, speaking and writing.

Language Arts Curriculum

Learner State Worksheet

1. Reading-Readiness -- The student is able to:

( ) 1. Recognize words by using context clues: oral context alone

( ) 2. Recognize words by using context clues: oral context with beginning consonant by itself

( ) 3. Recognize words by using context clues: oral context with beginning consonant in a printed word

( ) 4. Associate letters with the sounds they represent: b

( ) 5. Associate letters with the sounds they represent: c (hard)

( ) 6. Associate letters with the sounds they represent: d

( ) 7. Associate letters with the sounds they represent: f

( ) 8. Associate letters with the sounds they represent: g (hard)

( ) 9. Associate letters with the sounds they represent: h

( )10. Associate letters with the sounds they represent: j

( )11. Associate letters with the sounds they represent: k

( )12. Associate letters with the sounds they represent: l

( )13. Associate letters with the sounds they represent: m

( )14. Associate letters with the sounds they represent: n

( )15. Associate letters with the sounds they represent: p

( )16. Associate letters with the sounds they represent: r

( )17. Associate letters with the sounds they represent: s

( )18. Assoicate letters with the sounds they represent: t

( )19. Associate letters with the sounds they represent: v

( )20. Associate letters with the sounds they represent: w

( )21. Associate letters with the sounds they represent: y

( )22. Associate letters with the sounds they represent: ch

( )23. Associate letters with the sounds they represent: sh

( ) 24. Associate letters with the sounds they represent: th (as in thumb)

( ) 25. Associate letters with the sounds they represent: wh

II. Reading-Pre-Primer -- The student is able to:

( ) 1. Recognize words by using context clues: oral context with consonant letters

( ) 2. Recognize words by using context clues: both oral and printed context with consonant letters

( ) 3. Recognize words by using context clues: printed context with consonant letters

( ) 4. Recognize words by using context clues: printed context with beginning vowel sound

( ) 5. Recognize words by using context clues: using context as clue to vowel sound

( ) 6. Associate letters with the sounds they represent: th (as in the)

( ) 7. Associate letters with the sounds they represent: z sound of s

( ) 8. Associate letters with the sounds they represent: Silent e

( ) 9. Associate letters with the sounds they represent: Blends: pl

( ) 10. Associate letters with the sounds they represent: Blends: nd

( ) 11. Associate letters with the sounds they represent: Blends: sl

( ) 12. Associate letters with the sounds they represent: Blends: x

( ) 13. Associate letters with the sounds they represent: Vowel y

( ) 14. Associate letters with the sounds they represent: Short and long i

( ) 15. Associate letters with the sounds they represent: Short a

( ) 16. Associate letters with the sounds they represent: Sound of a as in father

( ) 17. Associate letters with the sounds they represent: Schwa sound of a

( ) 18. Associate letters with the sounds they represent:
Vowel helper w

( ) 19. Unlock strange words by substituting consonant elements:

ack	atch	ig	inch y
all	eed	enny	ood
an	eek	erry	ork
and	ick	itch	
ay	ill	ittle	ond
e (me)	in	ob	oo
ad	ind (find)	it	ool
am	ip	o (no)	oop
at	ish	ock	oot
ed	eet	od	op
eep	en	og	ow (show)
ap	et	ot	own (down)
ash	id	ilk	ox

( ) 20. Use clues in structural elements to unlock strange words:
ending: s

( ) 21. Use clues in punctuation to get meaning from what he reads:
Period

( ) 22. Use clues in punctuation to get meaning from what he reads:
Comma

( ) 23. Use clues in punctuation to get meaning from what he reads:
Question mark

( ) 24. Use clues in punctuation to get meaning from what he reads:
Exclamation mark

( ) 25. Comprehend what he reads, using these skills: Recalling sequence of story events

( ) 26. Comprehend what he reads, using these skills: Drawing conclusions and inferences

( ) 27. Comprehend what he reads, using these skills: Forecasting probable turn of events

( ) 28. Comprehend what he reads, using these skills: Interpreting feelings of characters

( ) 29. Comprehend what he reads, using these skills: Understanding essential story elements

( ) 30. Comprehend what he reads, using these skills: Reading with natural expression

( ) 31. Comprehend what he reads, using these skills: Rereading quickly to locate specific material

( ) 32. Comprehend what he reads, using these skills: Reading to find answers to given questions

III. Reading-Primer -- The student is able to:

( ) 1. Associate letters with the sounds they represent: ng

( ) 2. Associate letters with the sounds they represent: h sound of wh

( ) 3. Associate letters with the sounds they represent: bl

( ) 4. Associate letters with the sounds they represent: cr

( ) 5. Associate letters with the sounds they represent: fl

( ) 6. Associate letters with the sounds they represent: fr

( ) 7. Associate letters with the sounds they represent: sk

( ) 8. Associate letters with the sounds they represent: st

( ) 9. Associate letters with the sounds they represent: str

( ) 10. Associate letters with the sounds they represent: tr

( ) 11. Associate letters with the sounds they represent: ld

( ) 12. Associate letters with the sounds they represent: mp

( ) 13. Associate letters with the sounds they represent: nk

( ) 14. Associate letters with the sounds they represent: nt

( ) 15. Associate letters with the sounds they represent: Silent gh

( ) 16. Associate letters with the sounds they represent: Silent k

( ) 17. Associate letters with the sounds they represent: Silent l

( ) 18. Associate letters with the sounds they represent: Short o

( ) 19. Associate letters with the sounds they represent: Short u

( ) 20. Associate letters with the sounds they represent: Short u sound of o

( ) 21. Associate letters with the sounds they represent: Long e sound of ea

( ) 22. Associate letters with the sounds they represent: oo sound in out

( ) 23. Associate letters with the sounds they represent: aw sound of a

( ) 24. Unlock strange words by substituting consonant elements:

ade	ear (hear)	ing	ound
ake	eat	ist	out
ame	ee	ite	ow (now)
ane	end	oat	oy
ank	ent	old	ug
ard	ew	ole	ump
ark	ied	ook	un
ask	ight	oon	unny
ast	ike	ose	ust
aw	ine	ould	ut
ave	ile	ouch	

( ) 25. Use clues in structural elements to unlock strange words: Ending: ed

( ) 26. Use clues in structural elements to unlock strange words: Ending: ing

( ) 27. Use clues in structural elements to unlock strange words: Compound words

( ) 28. Use clues in punctuation to get meaning from what he reads: Quotation marks

( ) 29. Use clues in punctuation to get meaning from what he reads: 's - to show possession

( ) 30. Comprehend what he reads, using these skills: Using a table of contents

( ) 31. Evaluate what he reads: Pupil evaluation of a story

IV. Reading - 1 reader -- The student is able to:

( ) 1. Recognize words by using context clues: Printed context with both consonant and vowel letters

( ) 2. Recognize words by using context clues: Using context as clue to meaning of multi-meaning word

( ) 3. Associate letters with the sounds they represent: z

( ) 4. Associate letters with the sounds they represent: s sound of c

( ) 5. Associate letters with the sounds they represent: j sound of g

( ) 6. Associate letters with the sounds they represent: f sound of gh

( ) 7. Associate letters with the sounds they represent: f sound of ph

( ) 8. Associate letters with the sounds they represent: br

( ) 9. Associate letters with the sounds they represent: cl

( ) 10. Associate letters with the sounds they represent: gr

( ) 11. Associate letters with the sounds they represent: pr

( ) 12. Associate letters with the sounds they represent: thr

( ) 13. Associate letters with the sounds they represent:
Short and long oo

( ) 14. Associate letters with the sounds they represent:
Short e sound of a

( ) 15. Associate letters with the sounds they represent:
Short a sound of ai

( ) 16. Associate letters with the sounds they represent:
Long e sound of ee

( ) 17. Associate letters with the sounds they represent:
Short e

( ) 18. Associate letters with the sounds they represent:
Long o

( ) 19. Associate letters with the sounds they represent:
Long u

( ) 20. Unlock strange words by substituting consonant elements:

ace	art	ich	or
ag	ate	ide	ore
age	ea	illy	oss
ail	each	ime	other
ain	ead (head)	ink	our
aint	ean	ipe	ouse
air	ear (bear)	ive	over
ait	ell	ize	own (grown)
alk	ept	ocket	uch
ar	etter	one	uck
arge	ever	ong	ull (pull)
arm	ice	oom	urry

( ) 21. Use clues in structural elements to unlock strange words:
Ending: es

( ) 22. Use clues in structural elements to unlock strange words:
Prefix: a

( ) 23. Use clues in structural elements to unlock strange words:
Prefix: be

( ) 24. Use clues in structural elements to unlock strange words:
Contractions

( ) 25. Use clues in structural elements to unlock strange words: Doubled final consonant before vowel-beginning endings

( ) 26. Use clues in structural elements to unlock strange words: Dropped silent e before vowel-beginning endings

( ) 27. Use clues in punctuation to get meaning from what he reads: Apostrophe for contractions

( ) 28. Appreciate different forms of literature: Reading a Play

V. Reading - 2[1] reader -- The student is able to:

( ) 1. Associate letters with the sounds they represent: ow sound as in how

( ) 2. Associate letters with the sounds they represent: Short and long a sounds and generalizations for a, ai, ay

( ) 3. Associate letters with the sounds they represent: Short and long e sounds and generalizations for e, ee, ea

( ) 4. Associate letters with the sounds they represent: Short and long i sounds and generalizations for i

( ) 5. Associate letters with the sounds they represent: Short and long o sounds and generalizations for o, oa

( ) 6. Associate letters with the sounds they represent: Short and long u sounds and generalizations for u

( ) 7. Associate letters with the sounds they represent: Short and long oo sounds and generalizations for oo

( ) 8. Associate letters with the sounds they represent: Long e sound and long i sound of ie and generalization for ei

( ) 9. Associate letters with the sounds they represent: dr

( ) 10. Associate letters with the sounds they represent: gl

( ) 11. Associate letters with the sounds they represent: sc

( ) 12. Associate letters with the sounds they represent: sch

( ) 13. Associate letters with the sounds they represent: sm

( ) 14. Associate letters with the sounds they represent: sn

( ) 15. Associate letters with the sounds they represent: tw

( ) 16. Associate letters with the sounds they represent: sh sound of ti

( ) 17. Associate letters with the sounds they represent: Silent b

( ) 18. Associate letters with the sounds they represent:
Silent g

( ) 19. Associate letters with the sounds they represent:
Silent t

( ) 20. Unlock strange words by substituting consonant elements:

able	ess	ollar	udge
ange	ief	ollow	ue
ass	ies (ties)	ony	uit
aster	ife	oor	unch
aze	igger	ope	url
eam	ix	ought	urn
eg	oad	ove (love)	
ense	oast	owl (howl)	

( ) 21. Use clues in structural elements to unlock strange words:
Ending: er

( ) 22. Use clues in structural elements to unlock strange words:
Ending: y

( ) 23. Use clues in structural elements to unlock strange words:
Ending: ly

( ) 24. Use clues in structural elements to unlock strange words:
y changed to i before e-beginning endings

( ) 25. Use clues in punctuation to get meaning from what he reads:
Interpreting commas

( ) 26. Comprehend what he reads, using these skills: Reading
informative articles

( ) 27. Comprehend what he reads, using these skills: Distinguishing
between fiction and nonfiction

( ) 28. Comprehend what he reads, using these skills: Drawing
a conclusion

( ) 29. Comprehend what he reads, using these skills: Exercises
in getting the main idea

( ) 30. Comprehend what he reads, using these skills: Exercises
in reading for details

( ) 31. Comprehend what he reads, using these skills: Exercises
in interpreting pronouns and adverbs

( ) 32. Comprehend what he reads, using these skills: Exercises
in choosing the right word meaning

Learner State
Social Studies Curriculum

I. Locating Information

1. Work from books and other printed materials.
2. Use title of books as guide to contents.
3. Read newspapers, magazines, and pamphlets with discrimination.
4. Recognize these materials as sources of information about topics, especially current affairs.
5. Gather facts from field trips and interviews.
6. Identify the purpose of the field trip or interview.
7. Plan procedures, rules of behavior, questions to be asked, things to look for.
8. Take increasingly greater initative in the actual conduct of the field trip or interview.
9. Evaluate the planning and execution of the field trip or interview.
10. Find acceptable ways to open and close an interview.
11. Express appreciation for courtesies extended during the field trip or interview.
12. Record, summarize, and evaluate information gained.
13. Be selective in using audiovisual materials.
14. Use maps and globes in developing geographic skills.

II. Working With Others

1. Respect the rights and opinions of others.
2. Take part in making the rules needed by the group.
3. Understand the need for rules and the necessity for observing them.
4. Accept the role of leader or follower, as the situation requires.
5. Profit from criticism and suggestion.
6. Distinguish between work that can be done most efficiently by individuals and that which calls for group effort.

III. Reading Social Studies Materials

1. Understanding an increasing number of social studies terms.

IV. Applying Problem-solving and Critical-thinking Skills to Social Issues

1. Recognize that a problem exists.
2. Define the problem for study.
3. Review known information about the problem.
4. Plan how to study the problem.
5. Locate, gather, and organize information.
6. Interpret and evaluate information.
7. Summarize and draw tentative conclusions.
8. Recognize the need to change conclusions when new information warrants.
9. Recognize areas for further study.
10. Use problem-solving techniques in meeting societal problems.

V. Interpreting Maps and Globes

1. Orient the map and note directions.
2. Use cardinal directions in classroom and neighborhood.
3. Use cardinal directions and intermediate directions.
4. Use relative terms of location and direction, as near, far, above, below, up, down.
5. Understand that north is toward the North Pole and south toward the South Pole on any map projection.
6. Locate places on maps and globes.
7. Recognize the home city and the state on a map of the United States and on a globe.
8. Recognize land and water masses on a globe and on a variety of maps: physical-political, weather, etc.
9. Recognize that there are many kinds of maps for many uses, and learn to choose the best map for the purpose at hand.
10. Compare maps and draw references.
11. Understand that real objects can be represented by pictures or symbols on a map.

12. Interpret map symbols and visualize what they represent.

13. Learn to make simple sketch maps to show location.

Social Studies Curriculum

Learner State Worksheet

I. Locating Information -- The student is able to:

( ) 1. Work with books

( ) 2. Use title of books as guide to contents

( ) 3. Use table of contents

( ) 4. Alphabetize

( ) 5. Make efficient use of the dictionary

( ) 6. Alphabetize a list of words according to the first letter; according to the second and third letters

( ) 7. Read newspapers, magazines, and pamphlets with discrimination

( ) 8. Recognize these materials as sources of information about many topics, especially current affairs

( ) 9. Gather facts from field trips and interviews

( ) 10. Identify the purpose of the field trip or interview

( ) 11. Plan procedures, rules of behavior, questions to be asked, things to look for

( ) 12. Take increasingly greater initiative in the actual conduct of the field trip or interview

( ) 13. Evaluate the planning and execution of the field trip or interview

( ) 14. Find acceptable ways to open and close an interview

( ) 15. Express appreciation for courtesies extended during the field trip or interview

( ) 16. Record, summarize, and evaluate information gained

( ) 17. Be selective in using audiovisual materials

( ) 18. Use maps and globes in developing geographic skills

II. Evaluating Information -- The student is able to:

( ) 1. Distinguish between fact and fiction

( ) 2. Compare information about a topic drawn from two or more sources to recognize agreement or contradiction

3. Consider which source of information is more acceptable and why

4. Draw inferences and make generalizations from evidence

5. Reach tentative conclusions

III. Acquiring Information Through Listening and Observing -- The student is able to:

( ) 1. Listen and observe with a purpose

( ) 2. Listen attentively when others are speaking

( ) 3. Identify a sequence of ideas and select those that are most important

IV. Acquiring Information Through Reading -- The student is able to:

( ) 1. Read to find answers to question

( ) 2. Select the statements that are pertinent to the topic being studied

V. Organizing Information -- The student is able to:

( ) 1. Comprehend sequence and order as expressed in first, second third, etc.

( ) 2. Make a simple table of contents

( ) 3. Arrange events, facts, and ideas in sequence

( ) 4. Select the main idea and supporting facts

( ) 5. Compose a title for a story, picture, graph, map or chart

( ) 6. Select answers to questions from material heard, viewed, or read

( ) 7. Classify pictures, facts, and events under main headings or in categories

VI. Communicating Orally and In Writing -- The student is able to:

( ) 1. Speak with accuracy and poise

( ) 2. Develop an adequate vocabulary

( ) 3. Choose the appropriate word

( ) 4. Pronounce words correctly and enunciate clearly

( ) 5. Talk in sentences

( ) 6. Keep to the point in all situations involving oral expression

( ) 7. Develop self-confidence

( ) 8. Exchange ideas through discussion, either as leader or participant

( ) 9. Respect limitations of time and the right of others to be heard

( ) 10. Write with clarity and exactness

( ) 11. Apply the skills being developed in printing, writing, spelling, punctuating, capitalizing, and arranging written work

VII. Interpreting Pictures, Charts, Graphs, Tables -- The student is able to:

( ) 1. Interpret pictorial materials

( ) 2. Recognize these materials as sources of information

( ) 3. Note and describe the content of the material, both general and specific

( ) 4. Interpret by applying related information, and use the material as one basis for drawing conclusions

VIII. Working With Others -- The student is able to:

( ) 1. Respect the rights and opinions of others

( ) 2. Take part in making the rules needed by the group

( ) 3. Understand the need for rules and the necessity for observing them

( ) 4. Accept the role of leader or follower, as the situation requires

( ) 5. Profit from criticism and suggestion

( ) 6. Distinguish between work that can be done most efficiently by individuals and that which calls for group effort

IX. Reading Social Studies Materials -- The student is able to:

( ) 1. Understand an increasing number of social studies terms

X. Applying Problem-solving and Critical-thinking Skills to Social Issues -- The student is able to:

( ) 1. Recognize that a problem exists

( ) 2. Define the problem for study

( ) 3. Review known information about the problem

( ) 4. Plan how to study the problem

( ) 5. Locate, gather, and organize information

( ) 6. Interpret and evaluate information

( ) 7. Summarize and draw tentative conclusions

( ) 8. Recognize the need to change conclusions when new information warrants

( ) 9. Recognize areas for further study

( ) 10. Use problem-solving techniques in meeting and societal problems

XI. Interpreting Maps and Globes -- The student is able to:

( ) 1. Orient the map and note directions

( ) 2. Use cardinal directions in classroom and neighborhood

( ) 3. Use cardinal directions and intermediate directions

( ) 4. Use relative terms of location and direction, as near, far, above, below, up, down

( ) 5. Understand that north is toward the North Pole and south toward the South Pole on any map projection

( ) 6. Locate places on maps and globes

( ) 7. Recognize the home city and the state on a map of the United States and on a globe

( ) 8. Recognize land and water masses on a globe and on a variety of maps: physical-political, chalkboard, weather, etc.

( ) 9. Recognize that there are many kinds of maps for many uses, and learn to choose the best map for the purpose at hand.

( ) 10. Compare maps and draw references

( ) 11. Understand that real objects can be represented by pictures or symbols on a map

( ) 12. Interpret map symbols and visualize what they represent

( ) 13. Make simple large-scale maps of a familiar area, such as classroom, neighborhood

( ) 14. Use small objects to represent large ones, as a photograph compared to actual size

( ) 15. Use scale and compute distances

( ) 16. Learn to make simple sketch maps to show location

XII. Understanding Time and Chronology -- The student is able to:

( ) 1. Develop an understanding of the time system and the calendar

( ) 2. Learn to tell time by the clock

( ) 3. Use names of the days of the week in order

( ) 4. Use names of the months in sequence

( ) 5. Use calendar to find dates of special events and to determine length of time between important dates

( ) 6. Associate seasons with particular months in both northern and southern hemispheres

( ) 7. Understand the relation between rotation of the earth and day and night

( ) 8. Use the vocabulary of definite and indefinite time expression

( ) 9. Use such indefinite time concepts as past, future, long, ago, before, after, meanwhile

( ) 10. Develop an understanding of events as part of a chronological series of events and an understanding of the differences in duration of various periods of time

( ) 11. Recognize sequence and chronology in personal experiences, as the school day weekly schedule, etc.

( ) 12. Learn to arrange personal experiences in order

Mathematics Curriculum

Learner State Worksheet

I. Number and Numeration -- The student is able to:

( ) 1. Count the elements in a set (ten or less)

( ) 2. Identify cardinal numerals to ten

( ) 3. Identify ordinality to ten

( ) 4. Tell if a set has an odd (or even) number of elements (just to introduce this concept)

( ) 5. Tell when a region is divided into halves

( ) 6. Match the numeral to numbers of a set

( ) 7. Order the numerals zero through ten on the number line

( ) 8. Interpret the symbol, "<", less than and/or (>) greater than as related to the cardinal numbers of two sets

( ) 9. Count the elements in a set (twenty or less)

( ) 10. Identify cardinal numerals to twenty

( ) 11. Identify ordinality to twenty

( ) 12. Tell if a set has an odd (or even) number of elements

( ) 13. Tell when a region is divided into halves and fourths

( ) 14. Match the numeral to the number of a set

( ) 15. Order the numerals zero through twenty on the number line

( ) 16. Interpret the symbol, "<", less than and/or (>) greater than and (=) equal as related to numbers.

( ) 17. Identify place value (to hundreds) using sets of ten, with the counting frame, the abacus, etc.

( ) 18. Use zero in an addition problem (use zero as an addend)

( ) 19. Recalls orally or written numerals to the hundreds

( ) 20. Demonstrate expanded notation by rewriting the standard numeral on to an expanded numeral

( ) 21. Give orally many names for the same number

( ) 22. Construct equations as two different names for the same number

( ) 23. Extend (orally or written) simple number patterns involving concepts of "one more" than, "two more" than or "one less" than.

( ) 24. Tell the cardinal number of a set or given the cardinal number can construct a set it names; draw, use disks, etc.

( ) 25. Translate from oral numeral to the written numeral and from the written numeral to the oral numeral (read and write numerals from the word names)

( ) 26. Write in order whole numbers and locate them on the number line or hundreds chart

( ) 27. Skip count orally, verbally or in writing count by two's, three's, five's, ten's, hundred's and thousand's

( ) 28. Locate patterns of two's, three's and five's on the number line

( ) 29. Translate the standard numeral into expanded numeral notation (including place value) verbally and in writing

( ) 30. Locate simple fractions; i. e., ½, ¼, 1/3, 3/4, 2/3 on the number line

( ) 31. Write or orally identify ordinality through 31st

( ) 32. Write or orally identify Roman numerals through XII

( ) 33. "Mark-off" equal addends on the number line (as an introduction to multiplication)

( ) 34. Identify groups of tens and hundreds by telling, writing, drawing rings around, etc.

( ) 35. Interpret (orally or written) simple shorthand notation and symbols

( ) 36. Recognize cardinal numbers up to 1,000,000, by being able to tell the place value of any digit when asked

( ) 37. Order fractions such as fifths, sixths, sevenths and eights as to which is the larger of any two fractions that are named

( ) 38. Use the number line to locate whole numbers between two whole numbers; whole numbers before or after a whole number

( ) 39. Use the number line to round-off numbers to the nearest tens, etc.

( ) 40. Solve word problems involving the concept of place value

II. Operations - Addition and Subtraction -- The student is able to:

( ) 1. Join sets; whose cardinal number is not larger than ten

( ) 2. Separating sets into sub sets; whose cardinal number is not larger than five

( ) 3. Join sets; whose cardinal number is not larger than twenty

( ) 4. Separate sets into sub sets; whose cardinal number is not larger than ten

( ) 5. Demonstrate and/or translate addition and/or subtraction on the number line

( ) 6. Identify examples of the associative and commutative properties of addition on the number line

( ) 7. Recognize the symbols "+" and "-"

( ) 8. To replace a placeholder (□) with the proper numeral in a simple equation

( ) 9. Tell or write simple equations (number sentences) derived from a reading or story type problem

( ) 10. Tell a story type problem from a simple equation (number sentence)

( ) 11. Add one digit numbers when the numerals are written in either the vertical or horizontal form

( ) 12. Recall families of facts involving three single digit numerals and the operations of addition and subtraction

( ) 13. Give other names for the same number

( ) 14. Complete sentences by writing the symbols +, -, =, >, < in the space provided to make a true statement

( ) 15. Tell story problems involving one or more numbers

( ) 16. Interpret (solve) open sentences; i. e., write or give an oral answer for the missing numeral when the open sentences are written in the equation form.

( ) 17. Tell a statement (story) about an open sentence written in equation forms

( ) 18. Tell story problems about an open mathematical sentence involving "< or >"

( ) 19. Write an open sentence from a simple reading type problem

( ) 20. Interpret (solve) problem in addition and subtraction which involve the use of zero

( ) 21. Do vertical and/or horizontal forms for addition and subtraction that doesn't involve regrouping; i. e., ones as tens or tens as ones

( ) 22. Recall, with mastery, the basic addition and subtraction facts

( ) 23. Demonstrate or interpret by the use of the number line, or drawings of objects, the solution to open sentences not having numerals of more than two digits

( ) 24. Rename written or oral ones as tens and tens as hundreds in addition

( ) 25. Demonstrate skill in the regrouping process as it is related to adding two numbers where "carrying" is involved

( ) 26. Rename written or oral tens as ones and (hundreds as tens) in subtraction

( ) 27. Demonstrate his skill in the regrouping process as related to subtraction problems which involve "borrowing"

( ) 28. Do horizontal addition using two and three addends of one digit or two digits involving the parentheses symbol, "( )" and the commutative and/or associative principles

( ) 29. "Carrying" using two or more addends of one or more digits

( ) 30. Reconstruct addition and subtraction problems with up to four digit numerals when there is no regrouping required

( ) 31. Solve story problems involving addition and/or subtraction

( ) 32. Add three two digit numbers that involve (regrouping) borrowing

( ) 33. Subtract two two digit numbers that involve (regrouping) borrowing

( ) 34. Add two four digit numbers that involve (regrouping) carrying

( ) 35. Subtract two three digit numbers that do not involve regrouping or renaming

( ) 36. Interprets the relationship between addition and subtraction operations by being able to write or select a "subtraction sentence" that is related to an addition sentence

III. Operations - Multiplication and Division -- The student is able to:

( ) 1. Demonstrate multiplication on the number line, by using equal addends; by skip counting or by relating repeated addition to multiplication

( ) 2. Partition a set into equal subsets and write the multiplication equation that describes the partition

( ) 3. Write and/or orally answer the multiplication facts through 5 times 5 (extend further when possible)

( ) 4. Translate, written or oral, successive equal jumps on the number line into an addition and/or multiplication equation

( ) 5. Find and record the count of rectangular arrays

( ) 6. Explain the commutative property of multiplication by sets of jumps on the number, or by drawing rectangular arrays

( ) 7. Find and record the area of rectangles and/or find one of the sides when the other side and the area is known, (a way to introduce division and one of the symbols that indicate division)

( ) 8. Recall or solve multiplication problems using one (the multiplicative identity) and division problems

( ) 9. To state the answer to a multiplication problem involving zero as a factor and division problems

( ) 10. Fill in a table that will contain the multiplication facts to 10 times 10

( ) 11. Write or tell the multiplication facts through 9.

( ) 12. Demonstrate his ability to multiply - two place multiplication with one factor less than ten

( ) 13. Demonstrate multiplication with three-place multiplication with one factor less than ten

( ) 14. Show the relationship between subtraction and division by solving a simple division problem by subtraction, and by the use of the number line

( ) 15. Divide with one digit divisor and no remainder

( ) 16. Divide with one digit divisor with remainder

( ) 17. To find the missing factor in a multiplication and/or division sentence.

( ) 18. Solve story problems involving multiplication and/or division

IV. Functions and Relations -- The student is able to:

( ) 1. Construct a true statement by writing or telling which of the following operations +, -, will fit the open sentence

( ) 2. Construct a true statement by writing or telling which of the following relations, $>$, $<$, = or $\neq$ will fit the open sentence

( ) 3. Show on the number line patterns of the type, add 1, add 2, add 5, add 10, or subtract, subtract 2, subtract 5, subtract 10

( ) 4. Follow directed jumps on a lattice of dots, along with needed notation or symbols

( ) 5. Write numerals for missing numbers in a sequence

( ) 6. Fill in two-dimensional tables involving the operations of addition, subtraction, multiplication, and division on a number

( ) 7. Demonstrate composition of a function on a display showing parallel sections of the number line

( ) 8. Demonstrate on the double number line the operation of simple functions, also the inverse (the undoing)

( ) 9. Choose the correct answer to simple word problems involving $>$ $<$, =, $\neq$ and operations + and -

( ) 10. Construct a set of multiples, such as, multiples of two, three, four, etc.

( ) 11. Construct a set, whose elements are equivalent ordered pairs, from a given ordered pair

( ) 12. Compare an ordered pair that is an element of a set of equivalent ordered pairs (proportional relation) as a rate pair

( ) 13. Construct and/or be able to interpret a graph showing location of ordered pairs on a plane

( ) 14. Construct the graph of a function on the plane

( ) 15. Identify the rule for a function game

V. Geometry -- The student is able to:

( ) 1. Recognize (tell the name of) circle, triangle, rectangle and square

( ) 2. Identify the regions associated with a circle, a triangle, a rectangle and a square

( ) 3. Identify simple closed curves along with inside and outside regions

( ) 4. Recognize (tell the name of) circle, triangle, rectangle and square

( ) 5. Identify the regions associated with a circle, a triangle, a rectangle and a square

( ) 6. Identify simple closed curves along with inside and outside regions

( ) 7. Identify not closed curves

( ) 8. Draw simple geometric figures from line segments

( ) 9. Recognize and name, orally or written, plane figures - rectangle, square, triangle, circle and the solids - rectangular prism, cube and sphere

( ) 10. Identify, written or orally, points, lines, line segments, angles, closed regions

( ) 11. Draw a square, rectangle, triangle and use compass to draw a circle

( ) 12. Locate, written or orally, inside, on, outside of various plane figures

( ) 13. Classify regions according to shape

( ) 14. Classify regions of the same shape according to size

( ) 15. Draw on a lattice of points line segments that are twice the size of a given line segment or half the size of a given line segment

( ) 16. Draw on a lattice of points, plane figures; i. e., rectangles, squares triangles, that have twice the perimeter or one-half the perimeter of a given plane figure (effect on area)

( ) 17. Draw the reflection of a simple given plane figure

( ) 18. Draw lines of symmetry of simple plane figure

( ) 19. Draw or cut-out of grid paper the net of a cube

( ) 20. Record, write in a table or tell orally, the fractional parts of geometric shapes that have been divided into equal parts

( ) 21. Recognize and name a triangle, quadrilateral, pentagon and hexagon by noting the number of sides and verticles each figure has

( ) 22. Identify the legs, hypotenuse, the right angle and recognize when it is an isosceles right triangle

( ) 23. Draw a right angle and a right triangle

( ) 24. Describe the relations between the angles that are formed when two parallel lines are cut (intersected by) a third line

( ) 25. Recognize and draw parallel lines

VI. Measurement -- The student is able to:

( ) 1. Make simple comparisons in length

( ) 2. Make simple comparisons in volume and weight

( ) 3. Measure and compare the lengths of line segments

( ) 4. Read and write numerals, to 12, on the face of a clock

( ) 5. Write or tell time, from a setting on a clock or a printed picture of a clock, for each hour

( ) 6. Tell before or after the hour when the hour hand is placed between two numerals

( ) 7. Correctly tell or write the time as to different ½ hours on the clock; i. e., half-past or half hour before; is able to do the same with ¼ hour

( ) 8. Interpret 5 minute intervals and uses equalities and inequalities in comparing fractional parts of an hour; i. e., 20 minutes is greater than ½ hour, etc.

( ) 9. Recognize the ruler and yardstick

( ) 10. Measure line segments and the perimeter of simple plane figures to the nearest inch with primary ruler

( ) 11. Measure larger items (desk top, other students, length of the room) to the nearest foot and to the nearest inch

( ) 12. Tell the relative value of cent, nickel, dime, quarter and half dollar, (dollar bill?)

( ) 13. Match the coins with the numerical value in cents orally or when written with the cent symbol

( ) 14. Express (tell and/or write or chart) the different ways leading to the least number of coins required to make some amount; i.e., 18¢ as 18 cents, 1 nickel and 13 cents, 3 nickels and 3 cents, 1 dime and 1 nickel and 3 cents, etc.

( ) 15. Identify and distinguish between gallons, quarts, pints, and cups; can order these as to their volume

( ) 16. Identify equal volumes, such as, 4 cups has the same measure as 2 pints which has the same measure as 1 quart, etc.

( ) 17. Identify regions by coloring them in and can color perimeters to identify them

( ) 18. Distinguish between units of length, area and volume

( ) 19. Comprehend the relationship between the common measuring units (segment, square, and cube) and length, area and volume

( ) 20. Measure with different unit segments

( ) 21. Measure to the nearest ½ inch and the nearest centimeter

( ) 22. Find the area of regular plane figures in units of square inch and square centimeter

( ) 23. Find volume by counting unit cubes

( ) 24. Distinguish between various liquid measures; i.e., cup, pint, quart, ½ gallon and gallon

( ) 25. Identify diagonals

( ) 26. Recognize that measurement is an approximation by comparing the measurements made by using smaller standard units, i.e.; 1 inch, ½ inch, 1/16 inch, etc.; in measuring an identical object

VII. Structure -- The student is able to:

( ) 1. Identify place value of the one's (units), 10's, 100's, 1000's place by telling or writing the value of a digit when asked

( ) 2. Write and read Roman numerals through twelve

( ) 3. Construct Roman numerals, through twelve, from the basic set; i.e., I, V, and X

( ) 4. Write Hindu Arabic numerals for Roman numerals

( ) 5. Demonstrate, written or orally, that addition and subtraction facts come in pairs (two mathematical sentences)

( ) 6. Identify the addition sentence related to a pair of subtraction facts

( ) 7. Reconstruct problems in addition and subtraction using two digit numerals

( ) 8. Tag (or label) blank points on the number line when the spaces have various values, such as, one, two, three, four, five and ten

( ) 9. Identify, by writing or telling, numbers which are prime

( ) 10. Write or tell the four different equations related to a set of numbers

( ) 11. Recognize the commutative and/or the associative properties of addition and multiplication

( ) 12. Recognize the distributive property

( ) 13. Understands the relationship between factors and products

VIII. Sets and Symbols --The student is able to:

( ) 1. Name, orally identify, from description or from a list (roster) elements of a set

( ) 2. Tell, orally when sets are equivalent or non-equivalent

( ) 3. Name (identify) the empty set

( ) 4. Orally identify the cardinal number of sets to ten

( ) 5. Identify sets of points

( ) 6. Match (one-to-one) the elements of two sets and tell if one is larger than the other or if the two sets contain the same number of elements; i.e., they are equivalent

( ) 7. Make the union of two sets (not larger than ten)

( ) 8. Separate a set into two sub-sets, when the original set has a cardinal number of ten or less than ten

( ) 9. Name, orally identify, from description or from a list (roster) elements of a set

( ) 10. Tell, orally, when sets are equivalent or non-equivalent

( ) 11. Name (identify) the empty set

( ) 12. Orally identify the cardinal number of sets to and including twenty

( ) 13. Identify sets of points

( ) 14. Match (one-to-one) the elements of two sets and tell if one is larger than the other or if the two sets contain the same number of elements; i.e., they are equivalent

( ) 15. Make the union of two sets (not larger than twenty)

( ) 16. Separate a set into two sub-sets, when the original set has aa cardinal number of twenty or less than twenty

( ) 17. Show with sets, the commutative and the associative properties of union, by arranging the elements of the sets to show instances of those properties

( ) 18. Demonstrate the idea of me-to-many matching (as related to measurement) through the use of a simple ruler (marked in inches and/or half inches) by giving or, telling the length in inches of various objects; such as the length of a desk, height of a chair, etc.

( ) 19. Recognize a set from oral or written (pictures of objects) description; and/or from a list (roster)

( ) 20. Identify the elements of a set

( ) 21. Recognize the use of braces ($\{\ \}$) as the symbol for a set

( ) 22. Identify the empty set

( ) 23. Name a sub-set of some other (master) set

( ) 24. Perform the union of sets (two)

( ) 25. Find the cardinal number of a set

( ) 26. Perform the intersection of sets (two)

( ) 27. Separate a set into subsets

( ) 28. Make a one-to-one matching between two sets and thereby tell if the sets are equivalent or non-equivalent

( ) 29. Make a one-to-many matching between sets, using a standard set as a reference; i.e., measurement

( ) 30. Partition (group, separate) a set into equivalent subsets

( ) 31. Identify, orally or in writing, when one set is equal to another set

( ) 32. Describe, give and example of, a finite set or finite sets

( ) 33. Distinguish between finite sets and infinite sets

( ) 34. Read and/or write a sentence that includes the symbol "$\sim$" for equivalence

( ) 35. Construct a product set (cross product) from two other finite sets.

Learner State
Science Curriculum

A. I. Observing I - Perception of Color -- The student is able to:

1. Name the three (3) principal colors: yellow, red, blue

2. Identify the following colors by sight: red, orange, yellow, green, blue and violet

3. Identify other colors as being like one of the colors yellow, red, and blue

III. Observing II - Observing Color, Shape, Texture and Size -- The student is able to:

1. Construct a classification of objects on the basis of color, shape, texture, and size

2. Identify a single object on the basis of color, shape, texture, and size

3. Name 2 or more characteristics of a single object from the following: color, shape, size, and texture

V. Observing III - Observing Temperature -- The student is able to:

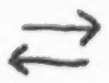
1. Distinguish between 2 different temperatures without the aid of a thermometer

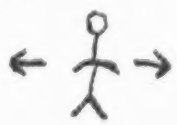
2. Distinguish between the temperature in one place and that in another, using a coded thermometer

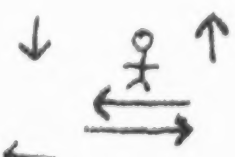
3. Distinguish between the temperature at one time of day and that at another, using a coded thermometer

4. Identify and name temperature ranges using codes on a thermometer

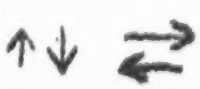
VII. Time/Space Relationship II - Recognizing Direction -- The student is able to:

1. Demonstrate directions or 

2. Identify parts of body 

3. Identify direction 

4. Identify direction or

5. Demonstrate movements 

VIII. Space/Time Relationship - Observing Movement -- The student is able to:

1. Identify objects which are moving or not moving

2. Identify body movements other than those of locomotion - moving eyelids, lower jaw, wrinkling the nose, turning the head → or ←

3. Name the direction in which the objects or animals are moving - that is, up, down, forward, back, right or left

IX. Observing IV - Perception of Sound -- The student is able to:

1. State and demonstrate that a soft sound can be heard better if the source of the sound is moved closer to the ear

2. Identify one sound as being louder or softer than; longer than or shorter than; and higher than, or lower than another sound

3. Identify a sound as being more like one of two dissimilar sounds

4. Identify objects or events in the environment by the sounds they make, to demonstrate that sounds are message carriers

X. Observing V - Observing Color Changes -- The student is able to:

1. State that the color of an object changed from X to Y, (after such a change has occurred).

2. Identify and name a colored object by comparing it with a different kind of object that has the same color

XIV. Lesson N - Observing VI - Observing Solids Changing into Liquids -- The student is able to:

1. Distinguish between solid objects which melt and those which do not melt

2. Identify and name the changes which occur when a solid changes to a liquid, including changes in properties such as height, width, color temperature, and shape

XVII. Lesson Q - Observing VII - Perception of Odor -- The student is able to:

1. State that certain objects do have an odor, or they do not

2. Identify groups of objects as having similar or different odors

XVIII. Lesson R - Observing VIII - Perception of Taste -- The student is able to:

1. Identify tastes that are sweet, sour, or salty

2. Distinguish between certain food tastes as similar to, or different from, each other

V. Lesson - Observing IX - Observation, Using Several of the Senses -- The student is able to:

1. Identify objects, or changes in objects, by using several of the senses

2. State which sense or senses he used to make his observations, by saying, for example, "I smelled it," "I saw it," and so on

VII. Observing X - Observing the Weather - The student is able to:

1. Construct a record of weather conditions on a chart, using standard symbols, and read these recorded symbols

2. Distinguish between the weather conditions on two days by examining the weather chart

3. State comparisons of weather conditions from day to day in comparative terms such as "hotter or warmer than," "cooler than," "windier than," or "cloudier than," using the data recorded on the weather chart

4. State the temperature in degrees, using a simple thermometer

VIII. Lesson - Communicating I - Identifying an Object -- The student is able to:

1. Distinguish between collections of information that are sufficient to identify an object and those that are not

2. Name a sufficient number of properties of an object (such as color, length, shape, feel or smell) so that a second person can identify the object

XIII. Observing II - Observing some Properties of Magnets -- The student is able to:

1. Identify a metal object of any shape or size as a possible magnet

2. Identify objects which are magnets by demonstrating their effect upon various metals

XV. Observing XII - Observing Color and Color Changes in Plants -- The student is able to:

1. State that the observed change in the color of an object occurred when another substance was added

2. Identify/name changes in the color of an object when the change occurs within a short time (a few minutes or less)

XVI. Lesson - Communicating II - Introduction to Graphing -- The student is able to:

1. Construct a bar graph

2. State the number of items represented by different bars and distinguish among such expressions as more than, fewer than, the same number as, most, and fewest

3. Identify/name the number of items represented by the bars of such a graph

XXII. Lesson - Observing XIII - Observing Mold Gardens -- The student is able to:

1. Identify from a group those materials that can support the growth of molds and those that cannot

2. State the color, shape, and size of a few kinds of molds

XXIII. Lesson - Communicating III - Describing Physical Changes -- The student is able to:

1. Identify/name the physical changes in an object in terms of such characteristics as color, shape, texture, sound, volume, length, and surface area

2. Distinguish any characteristics which remain unchanged while the object itself is changing

XXIV. Lesson - Communicating IV - Observing Collisions -- The student is able to:

1. Identify the heavier object as the one which exerts the greater force when two objects move at the same speed

2. Demonstrate a procedure for measuring and recording changes in the position of various objects

3. Identify the lighter object as the one which will move farther, given two objects of different weights and the same force exerted on each

XXV. Lesson - Communicating V - Describing Changes in Plants -- The student is able to:

1. Identify/state observed changes in a plant

2. Describe what was done to produce the observed changes

3. Describe the order in which the observed changes occurred

4. Describe the direction of motion and the rate of change of the motion of the parts of the plant which responded to the stimulus

I. Lesson - Communicating VI - Stages in Life Cycles -- The student is able to:

1. Describe orally a living or non-living object according to several of its characteristics

2. Describe orally the characteristics of a living object as it grows and changes from one stage to another

V. Lesson - Observing XIV - Observing Animal Motion -- The student is able to:

1. Identify the kinds of locomotion possible in animals of various shapes and with various kinds of appendages

2. Demonstrate the characteristic "push" common to animals that walk or crawl

VII. Lesson - Communicating VII - Graphing Data -- The student is able to:

1. Name the units along the vertical and horizontal axes of a bar graph

2. Construct a bar graph, given a frequency distribution

3. Distinguish between quantities shown on a bar graph and state comparisons in terms such as "greater than," "less than," "greatest," and "least"

VIII. Lesson - Predicting I - Using Graphs --The student is able to:

1. Construct predictions based on the data presented on a graph

2. Demonstrate a test of the predictions

IX. Lesson - Inferring I - Inferring the Characteristics of Packaged Articles-- The student is able to:

1. Distinguish between statements that are observations and those that are explanations of observations, and identify the explanations as inferences

2. Construct inferences about packaged articles and state them in terms of likelihood rather than certainty

XII. Lesson - Communicating VIII - Describing Growth from Parts of Plants -- The student is able to:

1. Distinguish between new plant growth and the part of the plant it is growing from

2. Describe vegetative growth qualitatively

3. Describe the techniques used to produce new plant growth from plant parts other than seeds in terms precise enough that other people will be able to follow the procedure

XIX. Lesson - Inferring II - Differentiating between Similar Things -- The student is able to:

1. Distinguish between observations and inferences
2. Identify observations that support an inference
3. Distinguish between an inference that accounts for all of the observations and one that does not
4. Identify the additional observations needed to distinguish between two or more similar objects, or to test an inference

XXII. Lesson - Communicating IX - Using a Sun Dial to Describe Shadow Changes -- The student is able to:

1. Identify the length and compass direction of the shadow of a given object at regular time intervals during the day by drawing line segments to represent them
2. Identify/name the pattern of changes that occur in both the length and the direction of the shadow

XXIV. Lesson - Observing XV - Observing Animal Responses to Stimuli -- The student is able to:

1. Identify stimuli in the environment of an animal
2. Identify the animal's responses to identified stimuli

XXVIII. Lesson - Predicting II - Surveying Opinion -- The student is able to:

1. Demonstrate the method of collection and organization of simple data
2. Construct a bar graph to represent a given collection of data
3. Construct a prediction based on the examination of data presented in the graph

Science Curriculum

Learner State Worksheet

I. Classifying IV - Observing Living and Nonliving Things -- The student is able to:

( ) 1. Name at least one characteristic of living objects

( ) 2. Construct a grouping into living and nonliving objects on the basis of observable characteristics

II. Using Space/Time Relationships VII - Symmetry -- The student is able to:

( ) 1. Demonstrate the symmetry of objects by matching their parts

( ) 2. State/demonstrate that some objects can be folded or cut in more than one way to produce matching halves

( ) 3. Identify objects which have line or plane symmetry

III. Using Space/Time Relationships VIII - The Shapes of Animals -- The student is able to:

( ) 1. Describe common environmental objects such as animals in terms of two- and three-dimensional shapes

( ) 2. Identify/demonstrate bilateral symmetry in animals

IV. Measuring II - Linear Measurement -- The student is able to:

( ) 1. State/demonstrate how many times a measuring stick can be laid end to end along a given length that is to be measured

( ) 2. State that when measuring sticks of different lengths are used to measure a given object, the results will be numerically different

( ) 3. State the results of measurements that are not an exact number of stick-lengths. For example, if the object to be measured is between four and five measuring sticks, the following expressions are acceptable: "The objects is more than four sticks"; "Four sticks and a little more"; 'Between four and five sticks"; or other similar answers

V. Lesson - Observing IX - Observation, Using Several of The Senses -- The student is able to:

( ) 1. Identify objects, or changes in objects, by using several of the senses

( ) 2. State which sense or senses he used to make his observations, by saying, for example, "I smelled it," "I saw it," and so on

VI. Lesson - Using Numbers V - Numbers and The Number Line -- The student is able to:

( ) 1. Identify/name the numerals 0, 1, -1, 2, -2, 3, -3, 4, -4, 5, -5, 6, -6, 7, -7, 8, -8, 9, and -9

( ) 2. Distinguish between any two positions on the number line and name positions by using the number names

VII. Observing X - Observing The Weather -- The student is able to:

( ) 1. Construct a record of weather conditions on a chart, using standard symbols, and read these recorded symbols

( ) 2. Distinguish between the weather conditions on two days by examining the weather chart

( ) 3. State comparisons of weather conditions from day to day in comparative terms such as "hotter or warmer than," "cooler than," "windier than," or "cloudier than," using the data recorded on the weather chart

( ) 4. State the temperature in degrees, using a simple thermometer

VIII. Lesson - Communicating I - Identifying An Object -- The student is able to:

( ) 1. Distinguish between collections of information that are sufficient to identify an object and those that are not

( ) 2. Name a sufficient number of properties of an object (such as color, length, shape, feel or smell) so that a second person can identify the object

IX. Lesson - Classifying V - Variation In Objects of The Same Kind -- The student is able to:

( ) 1. Identify and name variations among objects and organisms which may have many features in common

( ) 2. Describe features which are common for each member of a group

X. Lesson - Measuring III - Comparing Volumes -- The student is able to:

( ) 1. Order containers by volume when relative volumes can be distinguished by inspection

( ) 2. Order containers by volume, when ordering is not obvious by inspection, by pouring liquid or a finely divided solid (such as sand) frcm one container to another

( ) 3. Demonstrate the comparison of volume of containers by determining how many unit volumes are required to fill each of them

XI. Lesson - Using Numbers VI - Numbers 0 Through 99 -- The student is able to:

( ) 1. State that the numeral for ten is a one on the left and a zero on the right; the one indicates one set of ten objects, and the zero means there are no more objects-that is, a set of ten together with the empty set. He should be able to give a similar description for 20, 30, and so on, up through 90

( ) 2. Identify/name numbers in the sequence 11 through 99 as successors of ten, twenty, thirty, and so on. For example, he should state that the symbol 13 represents the sum of ten and three

( ) 3. State the predecessor and successor of each number in the sequence. For example, 28 is one less than 29, and 32 is one more than 31. He should be able to give a similar description for any number between 0 and 100

XII. Lesson - Measuring IV - Linear Measurement Using Metric Units -- The student is able to:

( ) 1. State the names of three metric units of linear measure-the centimeter, the decimeter, and the meter

( ) 2. Demonstrate how to select the appropriate metric measuring stick when asked to determine the length of an object

( ) 3. State the number of times a measuring instrument can be laid end-to-end along the linear dimension to be measured, as well as the result in terms of metric units

( ) 4. State measurements as being between two numbers, and name the unit used. For example, "The desk is between 7 and 8 decimeters wide."

( ) 5. Demonstrate the approximate length of a centimeter, a decimeter, and a meter

XIII. Observing II - Observing Some Properties Of Magnets -- The student is able to:

( ) 1. Identify a metal object of any shape or size as a possible magnet

( ) 2. Identify objects which are magnets by demonstrating their effect upon various metals

XIV. Measuring V - Making Comparisons Using A Balance -- The student is able to:

( ) 1. Order objects the weights of which differ appreciably by lifting them and by comparing them on an equal-arm balance

( ) 2. State that one object is heavier than another because the earth pull on that object is greater than it is on the other

( ) 3. Demonstrate how to compare small objects by counting the number of arbitrary units, such as paper clips, pins, or tacks, needed to balance the objects on an equal-arm balance

( ) 4. State the results of their measurements, as in the following example: "The object weighs more than ten paper clips but less than eleven paper clips"

XV. Observing XII - Observing Color and Color Changes in Plants -- The student is able to:

( ) 1. State that the observed change in the color of an object occurred when another substance was added

( ) 2. Identify/name changes in the color of an object when the change occurs within a short time (a few minutes or less)

XVI. Lesson - Communicating II - Introduction to Graphing -- The student is able to:

( ) 1. Construct a bar graph

( ) 2. State the number of items represented by different bars and distinguish among such expressions as more than, fewer than, the same number as, most, and fewest

( ) 3. Identify/name the number of items represented by the bars of such a graph

XVII. Using Space/Time Relationships - 9 Shadows -- The student is able to:

( ) 1. Identify a three-dimensional object from its two-dimensional projections

( ) 2. Identify the two-dimensional projections of a given three-dimensional object

XVIII. Lesson - Using Numbers VII - Addition of Positive Numbers -- The student is able to:

( ) 1. Construct a new set of objects by putting two sets of objects together and state the number of members in the new set orally or in writing. The number of members in each set, or in the two sets combined, must not exceed 99, and the members of the two sets must be distinct from one another

( ) 2. Identify/name these written symbols:

A. = as is or equals, and conversely; and
B. + as plus, and conversely

( ) 3. Read the written statement 2+3=5 as "Two plus three is five," "The sum of two and three is five," "Two plus three equals five." And reversing the process, write the statement when it is given orally or demonstrated with objects

( ) 4. Construct/name the sum of any pair of numbers from 0 to 99, the sum of which does not exceed 99, and supply the missing number in a statement like 4+___=7 which has a sum of 9 or less

XIX. Lesson - Using Space/Time Relationships X - Recognizing and Using Angles, Directions, and Distance -- The student is able to:

( ) 1. Identify/name angles

( ) 2. Distinguish a right angle from other angles

( ) 3. State/demonstrate which of two angles is larger by superimposing one angle upon another

( ) 4. Demonstrate how to walk or mark off a designated number of "steps" in a specified direction

XX. Lesson - Using Space/Time Relationships XI - Time Intervals -- The student is able to:

( ) 1. Distinguish short time intervals involving minutes or seconds by counting, or by using a time-measuring device such as a metronome, pendulum, water clock, or sandglass timer

( ) 2. State observed differences in time intervals

XXI. Lesson - Measuring VI - Ordering Plane Figures by Area -- The student is able to:

( ) 1. Order groups of plane (two-dimensional) figures of various shapes and sizes from smallest to largest on the basis of area. He will do this by visual comparison, by superimposing one upon the other, and by comparison with some selected unit

( ) 2. State/demonstrate the area of plane figures in terms of some selected unit. For example, "This large square has an area as great as nine of these small squares"

XXII. Lesson - Observing XIII - Observing Mold Gardens -- The student is able to:

( ) 1. Identify from a group those materials that can support the growth of molds and those that cannot

( ) 2. State the color, shape, and size of a few kinds of molds

XXIII. Lesson - Communicating III - Describing Physical Changes -- The student is able to:

( ) 1. Identify/name the physical changes in an object in terms of such characteristics as color, shape, texture, sound, volume, length, and surface area

( ) 2. Distinguish any characteristics which remain unchanged while the object itself is changing

XXIV. Lesson - Communicating IV - Observing Collisions -- The student is able to:

( ) 1. Identify the heavier object as the one which exerts the greater force when two objects move at the same speed

( ) 2. Demonstrate a precedure for measuring and recording changes in the position of various objects

( ) 3. Identify the lighter object as the one which will move farther, given two objects of different weights and the same force exerted on each

XXV. Lesson - Communicating V - Describing Changes in Plants -- The student is able to:

( ) 1. Identify/state observed changes in a plant

( ) 2. Describe what was done to produce the observed changes

( ) 3. Describe the order in which the observed changes occurred

( ) 4. Describe the direction of motion and the rate of change of the motion of the parts of the plant which responded to the stimulus

XXVI. Lesson - Measuring VII - Seeds and Seed Germination -- The student is able to:

( ) 1. Demonstrate that the amount of water available to the seed determines whether or not a seed sprouts, and how quickly

( ) 2. Construct a table for observations made of seed growth

( ) 3. Demonstrate a procedure for determining the increase in the size of seeds after they have been soaked in water and state that water has entered the seeds and caused them to swell

Learner State Combined Worksheet

Measurement

1. Make simple comparisons in length, area and volume

2. Measure and compare the lengths of line segments

3. Demonstrate the sorting of objects into sets in which all objects of one set are of equal length

4. Order objects by length, from shortest to longest

5. Demonstrate that one object is the same length as another object by showing that both are the same length as a third

6. Recognize the ruler, yardstick, and meter stick

7. State/demonstrate how many times a measuring stick can be laid end-to-end along a given length that is to be measured

8. State that when measuring sticks of different lengths are used to measure a given object, the results will be numerically different

9. State the results of measurements that are not an exact number of stick lengths. For example, if the object to be measured is between four and five measuring sticks, the following expressions are acceptable: "The object is more than four sticks;" or other similar answers

10. Measure line segments and the perimeter of simple plane figures to the nearest inch with primary ruler

11. State the names of three metric units of linear measure - the centimeter, the decimeter, and the meter

12. Demonstrate how to select the appropriate metric measuring stick when asked to determine the length of an object

13. State the number of times a measuring instrument can be laid end-to-end along the linear dimension to be measured, as well as the result in terms of metric units

14. State measurements as being between two numbers, and name the unit used. For example, "The desk is between 7 and 8 decimeters wide."

15. Demonstrate the approximate length of a centimeter, a decimeter, and a meter

16. Measure larger items (desk top, other students, length of the room) to the nearest foot and to the nearest inch

17. Order groups of plane (two-dimensional) figures of various shapes and sizes from smallest to largest on the basis of area. He will do this by visual comparison, by superimposing one upon the other, and by comparison with some selected unit

18. State/demonstrate the area of plane figures in terms of some selected unit. For example, "This large square has an area as great as nine of these small squares"

19. Identify and distinguish between gallons, quarts, pints, and cups; order these as to their volume

20. Identify equal volumes, such as 4 cups have the same measure as 2 pints which have the same measure as 1 quart, etc.

21. Order containers by volume, when relative volumes can be distinguished by inspection

22. Order containers by volume, when ordering is not obvious by inspection, by pouring liquid or a finely divided solid (such as sand) from one container to another

23. Demonstrate the comparison of volume of containers by determining how many unit volumes are required to fill each of them

24. Distinguish between units of length, area and volume

25. Measure with different unit segments

26. Apply a rule to estimate the linear dimensions of common objects in terms of centimeters, decimeters, or meters

27. Name a known object that is approximately the same length or width as another object

28. Measure to the nearest one-half inch and the nearest centimeter

29. Find the area of regular plane figures in units of square inch and square centimeter

30. Find volume by counting unit cubes

31. Demonstrate the measurement of the volume of a liquid using metric units and state the results in metric units

32. Demonstrate that the volume of a liquid remains constant as the liquid is transferred from one container to another

33. Order objects the weights of which differ appreciably by lifting them and by comparing them on an equal-arm balance

34. State that one object is heavier than another because the earth-pull on that object is greater than it is on the other

35. Demonstrate how to compare small objects by counting the number of arbitrary units, such as paper clips, pins, or tacks, needed to balance the objects on an equal-arm balance

36. State the results of their measurements, as in the following example: "The object weighs more than ten paper clips but less than eleven paper clips"

37. Demonstrate that the amount of water available to the seed determines whether or not a seed sprouts, and how quickly

38. Construct a table for observations made of seed growth

39. Demonstrate a procedure for determining the increase in the size of seeds after they have been soaked in water and state that water has entered the seeds and caused them to swell

40. State that if an object does not move, the forces acting upon it must be in balance

41. State that attaching a weight to a spring increases the force pulling on the spring so that it stretches

42. Demonstrate with a spring whether two objects have the same or different weights

43. State that the representation of an object - for example, the picture of an animal - is not always life-size

44. State the relationship between the actual size of an animal and its representation when the scale is given

45. Demonstrate the procedure of indicating scale by drawing a line segment to represent a specific length

46. Make simple large-scale maps of a familiar area, such as classroom, neighborhood

47. Use small objects to represent large ones, as a photograph compared to actual size

48. Use scale and compute distances

49. Identify/name the temperature from his own arbitrary scale, from the Ceisius (centigrade) scale, and from the Fahrenheit scale

50. State the boiling and freezing points of water in both systems, and also the approximate normal body temperature

Time

1. Name the day of the week and distinguish the appropriate numeral on a calendar for a given day

2. Develop an understanding of the time system and the calendar

3. Use names of the months in sequence

4. Use names of the days of the week in order

5. Use calendar to find dates of special events and to determine length of time between important dates

6. Compare time intervals by making statements like this: "The period for reading was longer than the rest period"

7. Use the vocabulary of definite and indefinite time expression

8. Use such indefinite time concepts as past, future, long ago, before, after, meanwhile

9. Read and write numerals, to 12, on the face of a clock

10. Write or tell time, from a setting on a clock or picture of a clock, for each hour

11. Tell before or after the hour when the hour hand is placed between 2 numerals

12. State the time on the hour, given a clock and the position of the hour hand, by saying: "It is 9 o'clock"

13. Correctly tell or write the time as to different ½ hours on the clock; i.e., half-past or half hour before; be able to do the same for ¼ hour

14. Interpret 5-minute intervals and use equalities and inequalities in comparing fractional part of an hour; i.e., 20 minutes is greater than ½ hours, etc.

15. Associate seasons with particular months in both northern and southern hemispheres

16. Understand the relation between rotation of the earth and day and night

17. Develop an understanding of events as part of a chronological series of events and an understanding of the differences in duration of various periods of time

18. Recognize sequence and chronology in personal experiences, as the school day, weekly schedule, etc.

19. Learn to arrange personal experiences in order

20. Distinguish short time intervals involving minutes or seconds by counting, or by using a time-measuring device such as a metronome, pendulum, water clock, or sand-glass timer

21. State observed differences in time intervals

22. State the time orally to the nearest five minutes, given the position of the hour and minute hands on a clock

23. State the time orally to the nearest five minutes, given the time as written numerals, such as 8:25

24. Identify the time in writing, using numerals, given a clock face

25. Identify the time in writing, using numerals, given the time orally

26. State the number of days before or after a particular event, and identify the particular day on a calendar, such as the following: "It is eight days after Valentine's Day" or "It is five days before the class goes to the zoo"

27. State the number of hours before and after a particular time, and identify the time on a clock face, such as the following: "Three hours ago it was nine o'clock" or "Six hours from now it will be four o'clock"

Classifying and Organizing

1. Alphabetize
2. Make efficient use of the dictionary
3. Alphabetize a list of words according to the first letter; according to the second and third letters
4. Comprehend sequence and order as expressed in first, second, third, etc.
5. Make a simple table of contents
6. Arrange events, facts, and ideas in sequence
7. Select the main idea and supporting facts
8. Compose a title for a story, picture, graph, map or chart
9. Select answers to questions from material heard, viewed, or read
10. Construct a classification of the objects in a single character chosen by a child
11. Classify pictures, facts, and events under main headings or in categories
12. Construct a classification of the objects given according to variations in a single characteristic which has been specified by someone else
13. Identify and name words which are used in the construction of a classification system which is based on a single character
14. Describe to others the character he has chosen for classification
15. Construct a classification of a set of objects into two or more groups depending on whether the objects can or cannot be used in a stated way
16. Construct another classification of the same set of objects into new groups to serve a different stated purpose
17. State how some common animals are similar and how they are different
18. Distinguish one animal from another, using his senses as the only source of information
19. Construct a classification of animals, or pictures of animals on the basis of gross physical or behavioral characteristics
20. Name at least one characteristic of living objects
21. Construct a grouping into living and non-living objects on the basis of observable characteristics
22. Identify and name variations among objects and organisms which may have many features in common
23. Describe features which are common for each member of a group

24. Demonstrate a separation of living organisms commonly found in an aquarium into sets and subsets

25. State/demonstrate the place of new organisms in the appropriate categories and sub-categories of an established classification system

26. Construct a simple classification system (a key)

27. Identify a substance as being a solid, a liquid, or a gas

28. Demonstrate whether a substance is a solid, a liquid, or a gas by using the following physical characteristics: it has a shape of its own; it has a top surface that can be felt or seen; and it takes the shape of the container

29. State that some substances can exist in more than one of the three states: solid, liquid, and gas

30. Identify the principal colors by name

31. State an arrangement of hues and order it

32. Distinguish between two hues on the basis of purity and state that brilliant and dull colors of a specific hue differ in purity (saturation)

33. State/demonstrate a method for separating (classifying) the components in a particular mixture according to their size

34. Order the components of the mixture according to size

35. Demonstrate that the amount of each component in a mixture can be found by comparing the weights or volume of the components of that mixture

Using Numbers; Sets

1. Count the elements in a set (ten or less)
2. Identify cardinal numerals to ten
3. Identify ordinality to ten
4. Tell when a region is divided into halves
5. Match the numeral to numbers of a set
6. Order the numerals zero through ten on the number line
7. Interpret the symbol ($<$), less than and/or ($>$) greater than and (=) as related to the cardinal numbers of two sets
8. Count the elements in a set (twenty or less)
9. Identify cardinal numerals to twenty
10. Identify ordinality to twenty
11. Tell if a set has an odd (or even) number of elements
12. Tell when a region is divided into halves and fourths
13. Order the numerals zero through twenty on the number line
14. Identify place value (to hundreds) using sets of ten, with the counting frame, the abacus, etc.
15. Use zero in an addition problem (use zero as an addend)
16. Recalls orally or written number to the hundreds
17. Demonstrate expanded notation by rewriting the standard numeral on to an expanded numeral
18. Give orally many names for the same number
19. Construct equations as two different names for the same number
20. Extend (orally or written) simple number patterns involving concepts of "one more" than, "two more" than or "one less" than
21. Tell the cardinal number of a set or given the cardinal number can construct a set it names; draw, use disks, etc.
22. Translate from oral numeral to the written numeral and from the written numeral to the oral numeral (read and write numerals from the word names)
23. Write in order whole numbers and locate them on the number line
24. Skip count orally, verbally or in writing count by two's, three's, five's, ten's, hundred's and thousand's
25. Locate patterns of two, three's and five's on the number line

26. Translate the standard numeral into expanded numeral notation (including place value) probably verbally to start - in writing finally

27. Locate simple fractions; i.e., ½, ¼, 1/3, 3/4, 2/3 on the number line

28. Write or orally identify ordinality through 31st

29. Write or orally identify Roman numerals through XII

30. "Mark-off" equal addends on the number line (as an introduction to multiplication)

31. Identify groups of tens and hundreds by telling, writing, drawing rings around, etc.

32. Interpret (orally or written) simple shorthand notation and symbols

33. Recognize cardinal numbers up to 1,000,000, by being able to tell the place value of any digit when asked

34. Order fractions such as fifths, sixths, sevenths, and eighths as to which is the larger of any two fractions that are named

35. Use the number line to locate whole numbers between two whole numbers; whole numbers before or after a whole number

36. Use the number line to round-off numbers to the nearest tens, etc.

37. Join sets; whose cardinal number is not larger than ten

38. Separating sets into sub-sets; whose cardinal number is not larger than five

39. Join sets; whose cardinal number is not larger than twenty

40. Separate sets into sub-sets; whose cardinal number is not larger than ten

41. Partition a set into equal sub-sets and write the multiplication equation that describes the partition

42. Name, orally identify, from description or from a list (roster) elements of a set

43. Tell, orally, when sets are equivalent or non-equivalent

44. Name (identify) the empty set

45. Orally identify the cardinal number of sets to ten

46. Identify sets of points

47. Match (one-to-one) the elements of two sets and tell if one is larger than the other or if the two sets contain the same number of elements; i.e., they are equivalent

48. Make the union of two sets (not larger than ten)

49. Separate a set into two sub-sets, when the original set has a cardinal number of ten or less than ten

50. Orally identify the cardinal number of sets to and including twenty

51. Make the union of two sets (not larger than twenty)

52. Separate a set into two sub-sets, when the original set has a cardinal number of twenty or less than twenty

53. Show with sets the commutative and the associative properties of union, by arranging the elements of the sets to show instances of those properties

54. Demonstrate the idea of one-to-many matching (as related to measurement) through the use of a simple ruler (marked in inches and/or half inches) by giving or telling the length in inches of various objects; such as the length of a desk, height of a chair, etc.

55. Recognize a set from oral or written (pictures of objects) description; and/or from a list (roster)

56. Identify the elements of a set

57. Recognize the use of braces ($\{\ \}$) as the symbol for a set

58. Name a sub-set of some other (master) set

59. Perform the union of sets (two)

60. Find the cardinal number of a set

61. Perform the intersection of sets (two)

62. Separate a set into sub-sets

63. Make a one-to-one matching between two sets and thereby tell if the sets are equivalent or non-equivalent

64. Make a one-to-many matching between sets, using a standard set as a reference; i.e., measurement

65. Partition (group, separate) a set into equivalent subsets

66. Identify, orally or in writing, when one set is equal to another set

67. Describe, give an example of, a finite set or finite sets

68. Distinguish between finite sets and infinite sets

69. Read and/or write a sentence that includes the symbol "$\sim$" for equivalence

70. Construct a product set (cross product) from two other finite sets

Arithmetic Operations

1. Demonstrate and/or translate addition and/or subtraction on the number line

2. Identify examples of the associative and commutative properties of addition on the number line

3. Recognize the symbols "+" and "-"

4. Replace a placeholder (☐) with the proper numeral in a simple equation

5. Tell or write simple equations (number sentences) derived from a reading or story type problem

6. Tell a story type problem from a simple equation (number sentence)

7. Add one-digit numbers when the numerals are written in either the vertical or horizontal form

8. Recall families of facts involving three single-digit numerals and the operations of addition and subtraction

9. Give other names for the same number

10. Complete sentences by writing the symbols +, -, in the space provided to make a true statement

11. Tell story problems involving one or more numbers

12. Interpret (solve) open sentences; i.e., write or give an oral answer for the missing numeral when the open sentences are written in the equation form

13. Tell a statement (story) about an open sentence written in equation form

14. Tell story problems about an open mathematical sentence involving "< or > "

15. Write an open sentence from a simple reading type problem

16. Interpret (solve) problems in addition and subtraction which involve the use of zero

17. Do vertical and/or horizontal forms for addition and subtraction that doesn't involve re-grouping; i.e., ones as tens or tens as ones

18. Recall, with mastery, the basic addition and subtraction facts

19. Demonstrate or interpret by the use of the number line, or drawings of objects, the solution to open sentences having numerals of not more than two digits

20. Re-name written or oral ones as tens and tens as hundreds in addition

21. Demonstrate skill in the re-grouping process as it is related to adding two numbers where "carrying" is involved

22. Re-name written or oral tens as ones and (hundreds as tens) in subtraction

23. Demonstrate his skill in the re-grouping process as related to subtraction problems which involve "borrowing"

24. Do horizontal addition using two and three addends of one digit or two digits involving the parentheses symbol, "( )" and the commutative and/or associative principles

25. "Carrying" using two or more addends of one or more digits

26. Reconstruct addition and subtraction problems with up to four digit numerals when there is no re-grouping required

27. Solve story problems involving addition and/or subtraction

28. Add three two-digit numbers that involve (re-grouping) carrying

29. Subtract two tow-digit numbers that involve (re-grouping) borrowing

30. Add two four-digit numbers that involve (re-grouping) carrying

31. Subtract two three-digit numbers that do not involve re-grouping or re-naming

32. Demonstrate multiplication on the number line, by using equal addends; such as 4 groups of three, etc.

33. Write and/or orally answer the multiplication facts through 5 times 5 (extend further when possible)

34. Translate, written or oral, successive equal jumps on the number line into an addition and/or multiplication equation

35. Find and record the count of rectangular arrays

36. Explain the commutative property of multiplication by sets of jumps on the number line, or by drawing rectangular arrays

37. Find and record the area of rectangles and/or find one of the sides when the other side and the area is known, (a way to introduce division and one of the symbols that indicate division)

38. Recall or solve multiplication problems using one (the multiplicative identity)

39. State the answer to a multiplication problem involving zero as a factor

40. Fill in a table that will contain the multiplication facts to 10 times 10

41. Write or tell the multiplication facts through 9

42. Demonstrate ability to multiply - two place multiplication with one factor less than ten

43. Demonstrate multiplication with three-place multiplication with one factor less than ten

44. Show the relationship between subtraction and division by solving a simple division problem by subtraction

45. Divide with one digit divisor and no remainder

46. Divide with one digit divisor with remainder

47. Demonstrate, written or orally, that addition and subtraction facts come in pairs (two mathematical sentences)

48. Identify the addition sentence related to a pair of subtraction facts

49. Reconstruct problems in addition and subtraction using two digit numerals

50. Recognize the associative properties of addition and multiplication

51. Recognize the distributive property

Geometric Concepts

(Consolidation of Statements from Math and Science)

(Approximately in order by grade level)

1. Recognize and name, orally or written, plane figures (such as rectangle, square, triangle, ellipse, and circle) and solids (rectangular prism, cylinder, cube and sphere)

2. Identify the regions associated with a circle, triangle, rectangle and square

3. Draw with ruler or compass the plane figures: rectangle, square, triangle, ellipse and circle

4. Identify and name two-dimensional shapes that are components of regular three-dimensional shapes

5. Identify common two-dimensional shapes in objects in the environment

6. Identify and name the two-dimensional shape formed by a given arrangement of objects

7. Arrange himself and his classmates, as well as objects, in the forms of familiar two-dimensional shapes

8. Identify simple closed curves along with inside and outside regions

9. Identify open curves

10. Draw simple geometric figures from line segments

11. Identify, written and orally, points, lines, line segments, angles, closed regions

12. Locate, written or orally, points inside, on, or outside of various plane figures

13. Classify regions according to shape

14. Classify regions of the same shape according to size

15. Draw, on a lattice of points, line segments that are twice the size of a given line segment or half the size of a given line segment

16. Draw, on a lattice of points, plane figures such as rectangles, squares, triangles that have twice the perimeter or one-half the perimeter of a given plane figure (effect on area)

17. Draw the reflection of a given simple plane figure

18. Draw lines of symmetry of simple plane figures

19. Demonstrate the symmetry of objects by matching their parts

20. State/demonstrate that some objects can be folded or cut in more than one way to produce matching halves

21. Identify objects which have line or plane symmetry

22. Describe common environmental objects such as animals in terms of two- and three-dimensional shapes

23. Identify bilateral symmetry in animals

24. Identify a three-dimensional object from its two-dimensional projections

25. Identify the two-dimensional projections of a given three-dimensional object

26. Draw or cut out of grid paper the net of a cube

27. Record, write in a table, or tell orally, the fractional part of geometric shapes that have been divided into equal parts

28. Recognize and name a triangle, quadrilateral, pentagon and hexagon by noting the number of sides and vertices each figure has

29. Identify/name angles

30. Distinguish a right angle from other angles

31. State/demonstrate which of two angles is larger by superimposing one angle upon another

32. Identify the legs, hypotenuse, the right angle of a right triangle and recognize when it is an isosceles right triangle

33. Draw a right angle and a right triangle

34. Recognize and draw parallel lines

35. Describe the relations between the angles that are formed when two parallel lines are cut (intersected by) a third line

36. Identify/name straight and curved paths on a flat surface

37. Identify a straight-line path on a flat surface as the shortest distance between two points

38. Distinguish between closed and open paths on a plane surface

39. Demonstrate that a path drawn on the surface of a sphere must be curved; and that a line on the surface of cylinder or cone may be a curved or straight path, depending on its position

40. Demonstrate/state how to tell whether a surface is flat or not

41. Identify a straight path, a curved path, flat surfaces, curved surfaces, and curved surfaces that are spherical surfaces, by pointing to representations of them in the classroom

Understanding Time and Chronology

(Consolidation of Statements from Math, Science and Social Studies)

(Approximately in order by grade level)

1. Read and write numerals, to 12, on the face of a clock
2. Use names of the days of the week in order
3. Name the day of the week and distinguish the appropriate numeral on a calendar for a given day
4. Write or tell time, from a setting on a clock or on a picture of a clock, for each hour
5. Tell the time as being before or after an hour when the hour hand is placed between two numerals
6. Use the names of the months in sequence
7. Compare time intervals by making statements like: "The period for reading was longer than the rest period"
8. Tell or write the time to the nearest half-hour on a clock
9. Tell or write the time to the nearest quarter hour on a clock
10. Distinguish short time intervals involving minutes or seconds by counting, or by using a time-measuring device such as a metronome, pendulum, water clock, or sandglass timer
11. State observed differences in time intervals
12. State the time orally to the nearest five minutes, given the position of the hour and minute hands on a clock
13. State the time orally to the nearest five minutes, given the time as a written numeral, such as 8:25
14. Identify the time in writing, using numerals, given a clock face
15. Identify the time in writing, using numerals, given the time orally
16. Use calendar to find dates of special events and to determine length of time between important dates
17. Use the vocabulary of definite and indefinite time expression
18. Use such indefinite time concepts as past, future, long ago, before, after, meanwhile
19. State the number of hours before or after a particular time, and identify the time on a clock face, such as "Three hours ago it was nine o'clock" or "Six hours from now it will be four o'clock"

Behavioral Objectives Response Evaluation

Introduction:

The curriculum writing efforts of the PEP Project Staff have included the exhaustive task of writing behavioral objectives. This is being done to clarify the direction of the teacher and pupil activity in the classrooms. In order to facilitate the evaluation of the responses to these objectives, it was imperative that some format be prepared to:

A. describe the extend to which the concept or skill being taught is learned; and to

B. provide a means for recording successive trials or responses until mastery.

A format has been prepared to allow for the above purposes to be served. The teacher can outline or briefly describe the behavioral objective in the space provided. Placing the proper response number in the space provided below for the individual pupil with the date noted, will show at a glance the status of this pupil and this objective.

Behavioral Objectives Response Evaluation

Instructions:

The following dimensions are to be used by the teachers in the PEP Pilot Class to determine how well the student is meeting the behavioral objectives presented to him by way of the instructional processes. The designation 0, 1, 2, or 3 will be used when the teacher makes a decision, at a point in time, about the child's achievement.

0 - Zero 0%

1 - Acquainted 25%

2 - Reasonably efficient . 50%

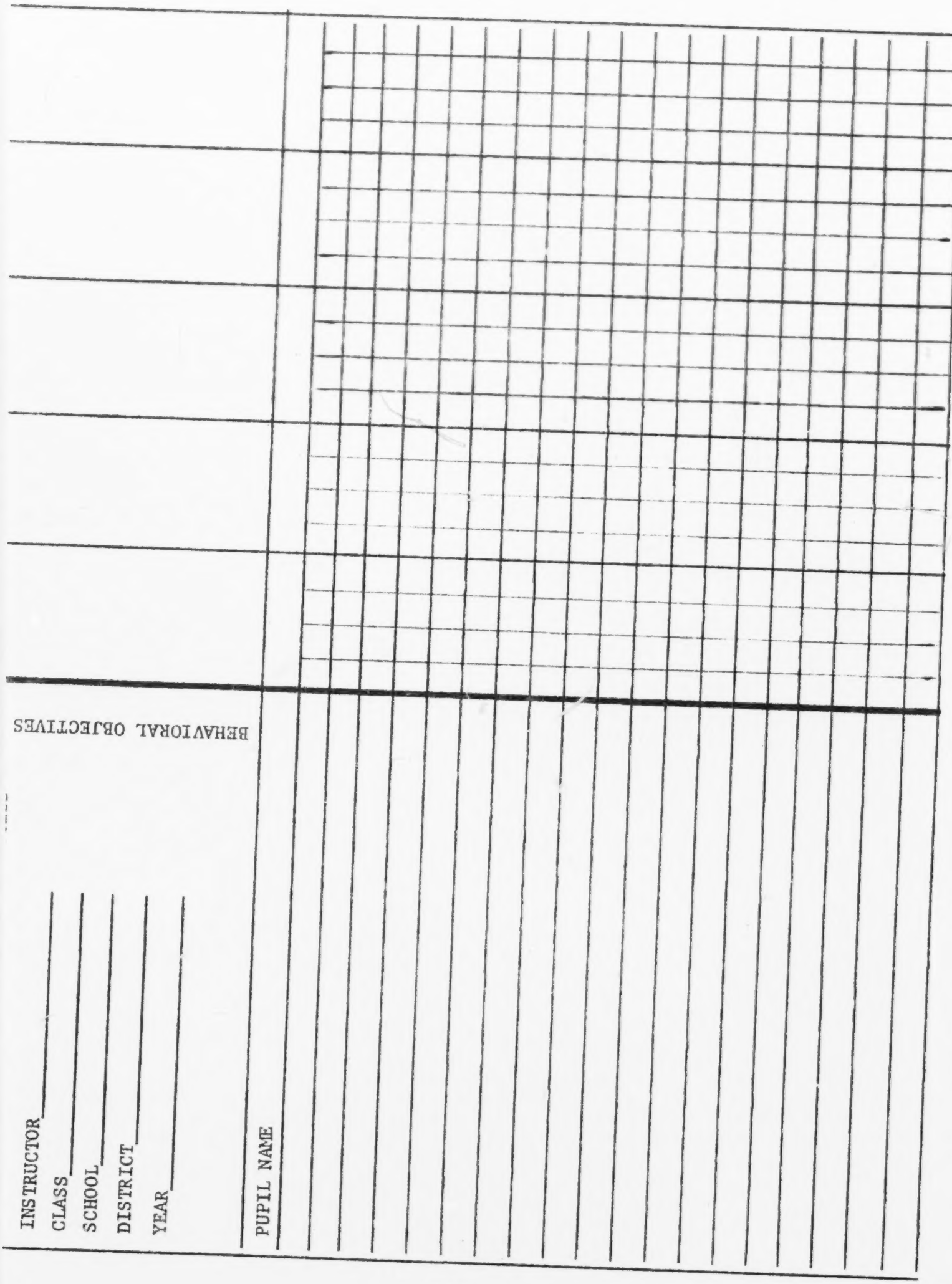
3 - Efficient 80%

0 - The learner is unable to perform in the manner prescribed in the operations defined by the stated Behavioral Objective. (Re-evaluation of the diagnostic input as it is related to the individual's prescription is needed.)

1 - The learner demonstrates some measurable ability to perform in the manner prescribed only after additional clues have prompted him. (Re-evaluation necessary.)

2 - The learner's operational level is indicative of partial mastery but needs strengthening in the specific context of the prescribed objectives. (Re-evaluation necessary.)

3 - The learner's operational level approaches the optimum level; he is able to perform in the manner prescribed by the stated objectives. (Re-evaluation possible to restructure future objectives.)


INSTRUCTOR
CLASS
SCHOOL
DISTRICT
YEAR
PUPIL NAME
BEHAVIORAL OBJECTIVES

BUCKS COUNTY BOARD OF SCHOOL DIRECTORS

Members and Representatives

Mrs. Susan D. Tinsman	President	New Hope-Solebury
Mr. R. Raymond Schuehler	1st Vice President	Neshaminy
Mr. Thomas J. Walsh	2nd Vice President	Bristol Township
Mrs. Hazel N. Bryden	Secretary	(Non-Member)
Mrs. Ruth J. Strelbski	Treasurer	(Non-Member)
Mr. Robert A. Dewey	Member	Bensalem
Mr. Morris J. Feldman	Member	Pennsbury
Mr. Charles D. Lownes, Jr.	Member	Council Rock
(To be Appointed)	Member	Pennridge
Mr. E. Ellsworth Clymer	Representative	Palisades
Mr. Willard G. Histand	Representative	Central Bucks
Mr. Elmer R. Mumbauer	Representative	Quakertown Community
Mr. Sidney W. Popkin	Representative	Bristol Borough
Mr. D. Alan White	Representative	Morrisville
Mr. Horace W. Yerkes	Representative	Centennial

BUCKS COUNTY STAFF

:. George E. Raab	County Superintendent	
:. Raymond Bernabei	Assistant County Superintendent	Curriculum & Instruction Services
:. Stanley B. Dick	Assistant County Superintendent	Regional Instructional Media Services
:. Melvin G. Mack	Assistant County Superintendent	Administration & Business Management Services
:. Rudolph P. Matyas	Supervisor of Special Education	
:. Albert M. Neiman	Assistant County Superintendent	Research & Planning Services
:. Harry E. Noblit	Assistant County Superintendent	In-Service Education Services
:. Joseph S. Tezza	Coordinator, Special Pupil Services	

DISTRICT SUPERINTENDENTS

Dr. Charles A. Bryan	Neshaminy
Dr. H. Ronald Huber	Central Bucks
Mr. William W. Ingraham	Pennsbury
Dr. Irvin A. Karam	Council Rock
Dr. Everett A. McDonald, Jr.	Centennial
Mr. David E. McKalips	Palisades
Dr. Paul Phillips	Morrisville
Mr. Joseph B. Roberts	New Hope-Solebury
Mr. Robert A. Rosenkrance	Pennridge
Dr. Samuel M. Sanzotto	Bristol Borough
Mr. Robert K. Shafer	Bensalem Township
Mr. Richard E. Strayer	Quakertown Community